ST JOSEPH'S INSTITUTION

END-OF-YEAR EXAMINATION 2023

YEAR 1

CANDIDATE NAME	**MARKING SCHEME**		
CLASS		INDEX NUMBER	

GEOGRAPHY

3rd October 2023

1 hour 20 minutes

(0800-0920)

Additional Materials : 3 pieces of Writing Paper

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number on all the work you hand in.

Write in dark blue or black pen on both sides of the paper.

You may use a soft pencil for any diagrams.

Do not use staples, paper clips, glue or correction tape/ fluid.

Answer **ALL** questions on writing paper.

Hand in Section A and Section B **SEPARATELY**.

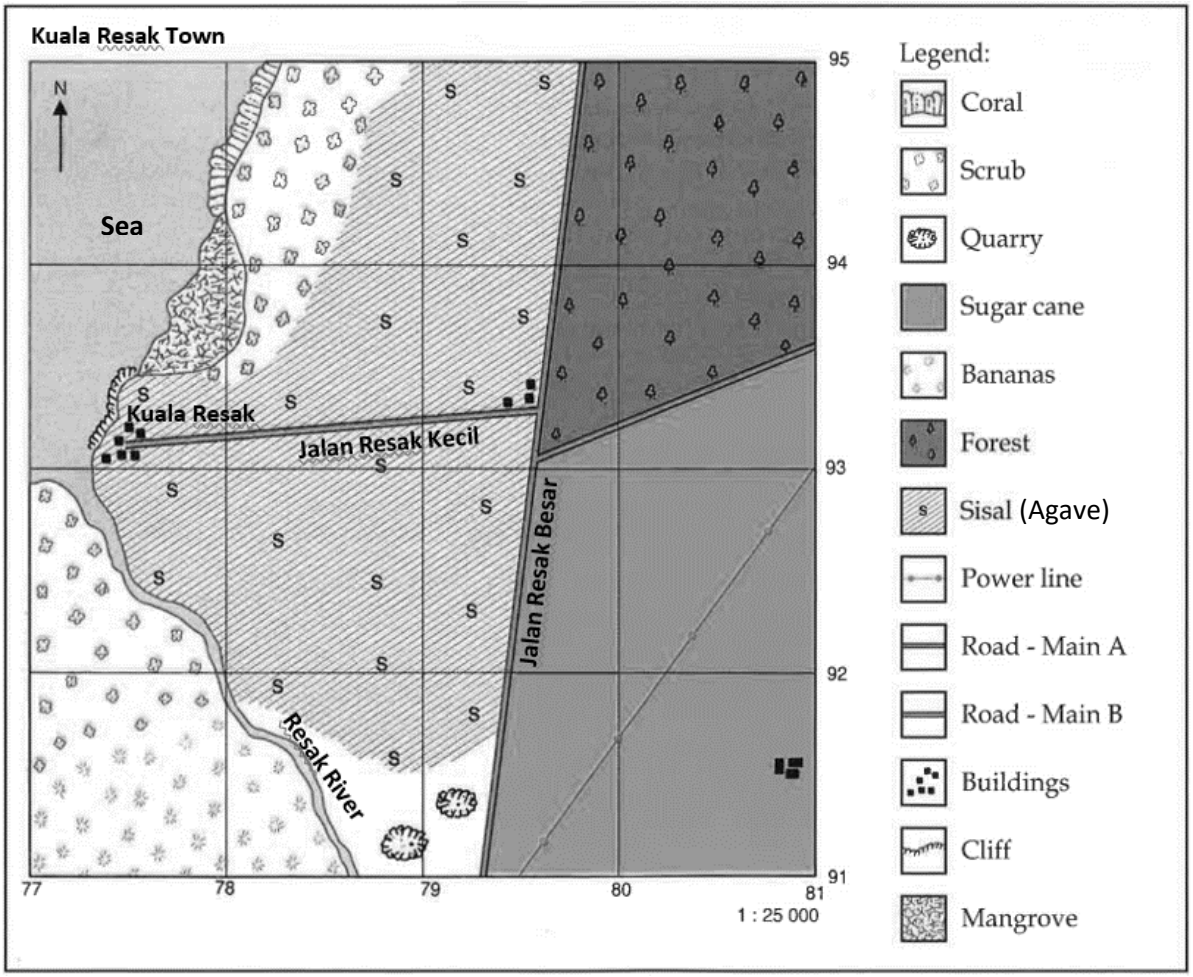
The number of marks is given in brackets [ ] at the end of each question or part question.

SECTION A: Structured Questions with Topographic Map Reading (22 marks)

Instructions:
Answer all questions on the writing paper provided. Remember to number your answers and leave lines between each answer.

1 Figure 1 (Fig. 1) shows a map extract of Kuala Resak Town.

Fig. 1



Source: 'The New Reading Topographical Maps' Fifth edition 2003. R.B. Bennet. ISBN 9814114758

NOTE: *Meanings of Malay terms.*
Kuala = River mouth
Jalan = Road
Besar = Large
Kecil = Small

Study and use Fig. 1 to answer all the following questions.

(a) What is the 6-figure grid reference of the T-junction, where Jalan Resak Kecil meets Jalan Resak Besar. [1]

- 796933 (±1 for 3rd & 6th digits)

(b) In which general direction is Resak River flowing? [1]

- Northwest

(c) Name a species of plant that can be found in grid square 7793. [1]

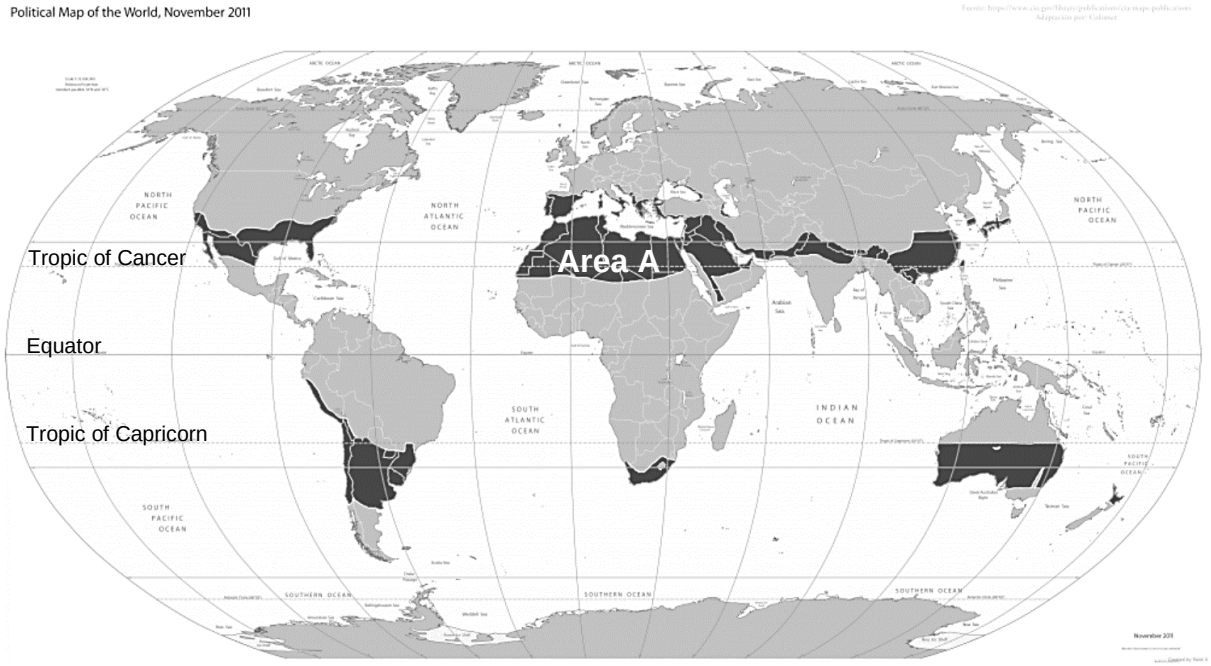
- Bruguiera, Rhizophora, Avicennia, Sonneratia. (any one)

(d) Calculate the actual distance (in km) of the total length of Jalan Resak Kecil. [1]

- *[Accept answers of accuracy from ±0.2km]*

2(a) Figure 2 (Fig. 2) shows the subtropical zone (shaded in black) of the Earth.

Fig. 2



Source: https://content.meteoblue.com/en/research-education/educational-resources/meteoscool/general-climate-zones/subtropical-zone

(i) Study and use Fig. 2 to describe the climatic conditions (temperature and precipitation) of Area A. [3]

- High mean annual temperatures of 25-30°C
- Large daily temperature range of 15°C and more
- Large annual temperature range of more than 20°C resulted from seasonal changes where summer temperatures can go beyond 40°C and winter temperatures can be as low as 10°C
- Low precipitation of less than 250mm
- Monthly precipitation is low with some months of the year without rain

[Any 3 points with at least 1 point describing temperature and at least 1 point describing precipitation.]

(ii) Select one climatic condition stated in (a)(i) and explain why it occurs at Area A. [3]

High mean annual temperatures

- Area A is in the subtropical zone where the angle in which the sun's radiation reaches the Earth's surface is high **throughout the year**.
- The sun's radiation will also pass through a smaller volume of atmosphere, resulting in more of the sun's radiation reaching the Earth's surface.

- On the Earth's surface, the sun's radiation is concentrated over a small area resulting in high temperatures.

OR

Large daily temperature range

- Area A is a desert where evaporation rate is greater than precipitation rate (arid), therefore it often experiences cloudless skies.
- During the day, the ground will receive most of the sun's radiation because there are no clouds to reflect and absorb the sun's radiation thus causing the temperatures to be high.
- During the night, the ground releases the day's heat into the atmosphere and because there are no clouds to absorb and reflect the sun's radiation back to the ground, most of the sun's radiation will be lost into the atmosphere causing the temperatures to be low.

OR

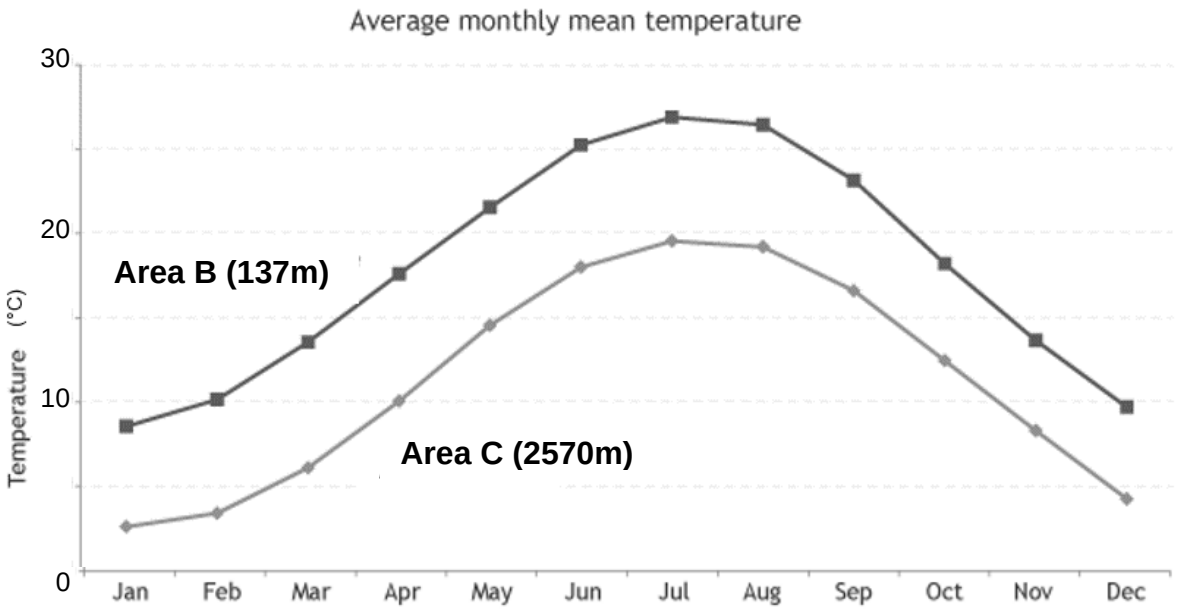
Low precipitation (Hadley Cell)

- The air at the Equator heats up the most, causing it to rise to higher altitude where the air will cool, condenses and forms clouds. Upon saturation, convectional rain occurs.
- After losing all the moisture, the air continues to rise to an altitude of up to 17km where the troposphere acts as a ceiling causing the rising air to move polewards and cools.
- As it cools, air then begins to descend between 15-30° North and South of the Equator. The descending air begins to warm up and becomes dry. At the same time, the descending denser air suppresses the rising less dense air from the Earth's surface, thus suppressing the formation of clouds. This resulted in the arid conditions experience in Area A.

[1 point = 1 mark, up to a total of 3 marks. Accept answers/points that show conceptual understanding.]

(b) Figure 3 (Fig. 3) shows the temperature graph of Location B and Location C, both are found on the same island.

Fig. 3



Adapted from:
https://www.climate.gov/sites/default/files/styles/full_width_620_original_image/public/AshMtM_graph.png?itok=nbsdrRAO

(i) Study and use Fig. 3 to explain the differences in temperatures between Location B and Location C. [3]

- The temperatures at Location B are generally higher than the temperatures at Location C because Location C is a highland/mountain.
- Due to gravitational force, there will be more air molecules nearer the Earth's surface (low altitude) than up in the mountain (high altitude).
- Air molecules trap heat, therefore, the lower the altitude, the higher the temperature and the higher the altitude, the lower the temperature.

[1 point = 1 mark, total of 3 marks. Accept answers/points that shows conceptual understanding.]

(ii) Explain the type of rain that will most commonly occur at Area C. [3]

- Relief rain will most commonly occur in this small island because of the presence of a mountain in Area C.
- Prevailing winds will blow moist air towards the mountain and will be forced to rise on the side of the mountain.
- As the moist air rise, it will cool, condenses and form clouds. Upon saturation, rain will occur.

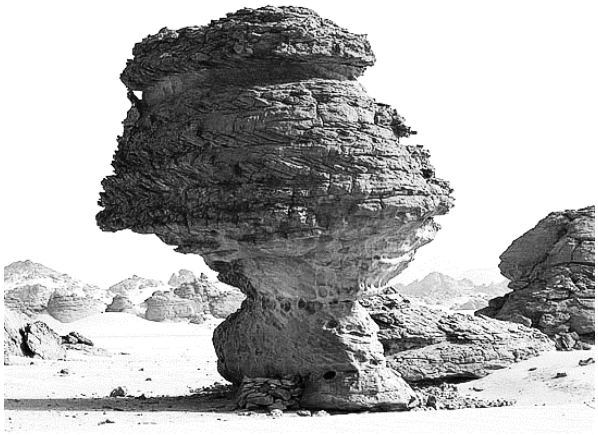
[1 point = 1 mark, total of 3 marks. Accept answer/points that shows conceptual understanding.]

(c) Figure 4A (Fig. 4A) shows a statue carved from marble and Figure 4B (Fig. 4B) shows a rock landform in the desert.

Fig. 4A

Source: https://i.pinimg.com/originals/0a/bb/c3/0abbc36568ddbffbd1930946d02c29dd.jpg

Fig. 4B



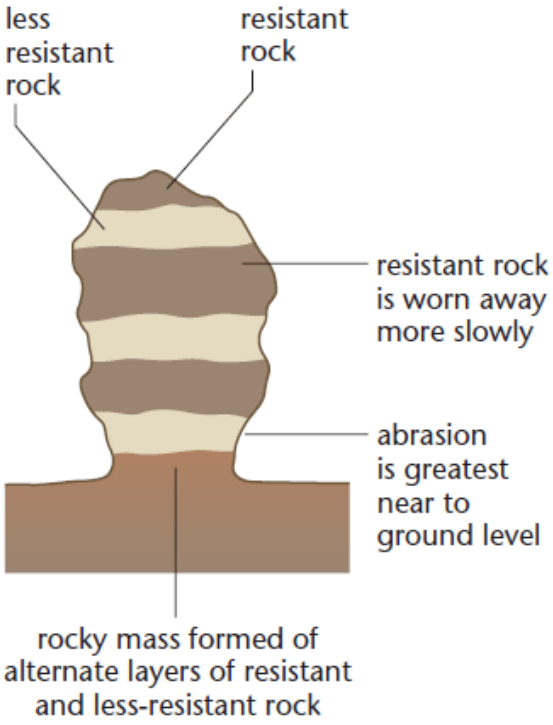
Source: https://3.bp.blogspot.com/-8VxQYiRVIlE/TpSrI-NhdRI/AAAAAAAAACM/wv39W1sd6IM/s1600.jpg

(i) Study Fig. 4A and Fig. 4B to identify the processes that caused them to look the way they do. [2]

- Fig. 4A – chemical weathering
- Fig. 4B – wind erosion

(ii) With the use of a well-labelled diagram, explain the formation of the rock landform in Fig. 4B. [4]

- Wind carries particles/ sediments and these particles/ sediments will hit against rock and erode the rock surface
- Abrasion is greatest near to ground level due to the presence of larger particles being carried along at the lower levels of the wind
- Resulting in the lower segment of the rock being more weathered than the higher segment



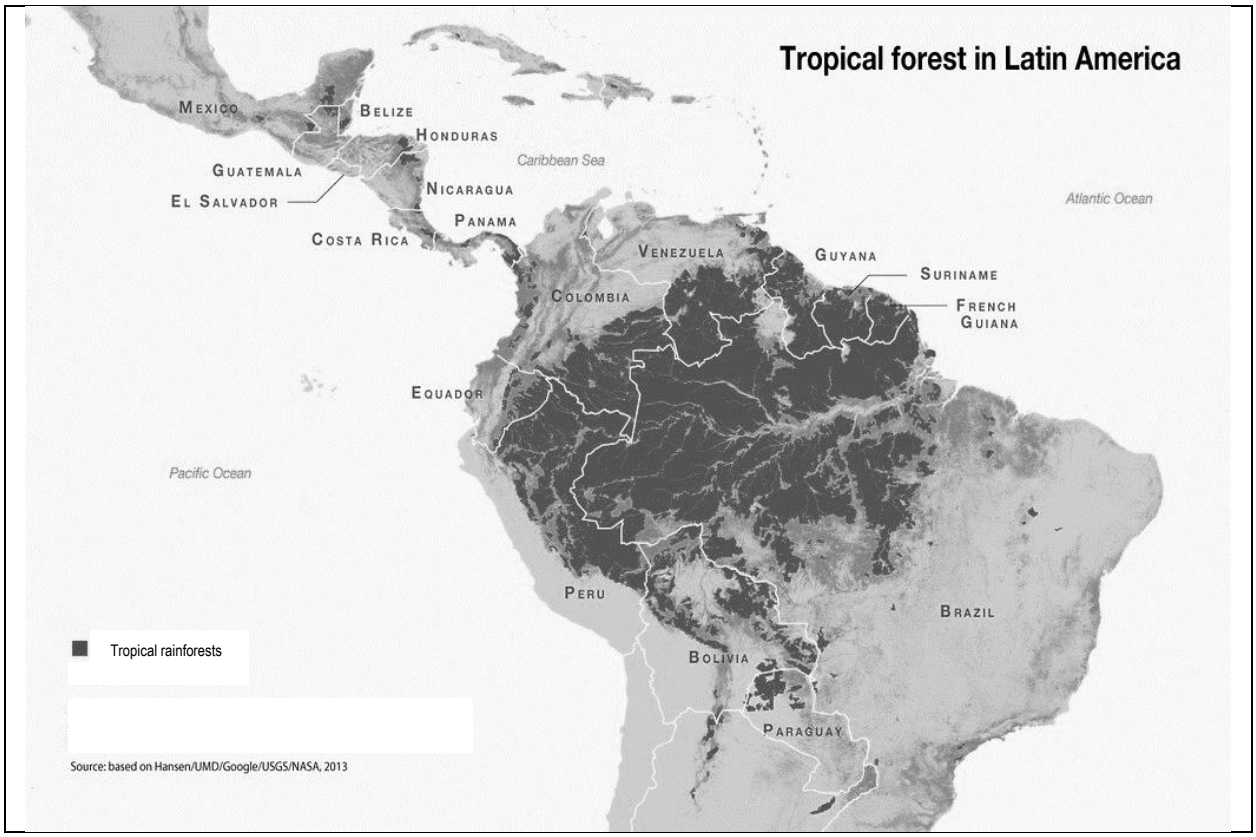
[1 point = 1 mark, total of 3 marks for explanation. 1 mark for well-labelled diagram.]

SECTION B: Structured Questions (18 marks)

Instructions:
*Begin this section on a **fresh piece of writing paper**.*
Answer all questions on the writing paper provided. Remember to number your answers and leave lines between each answer.

3(a) Figure 5 (Fig. 5) shows the distribution of tropical rainforests in Latin America (Central and South America).

Fig. 5



Source: https://live.staticflickr.com/474/32241392291_4058729d74_b.jpg

(i) Study and use Fig. 5 to describe the distribution of tropical rainforests in Latin America. [2]

- The tropical rainforests in Latin America are concentrated in the northern part of South America continent.
- The largest area of tropical rainforests can be found in the north and northwest part of Brazil, which makes up about 40-50% of the country's land area.
- The tropical rainforests in South America can be found in 11 countries (including Brazil), like Equador, Peru, Colombia, Venezuela etc.

[1 point = 1 mark, total of 2 marks. Accept any plausible answers that show spatial understanding and analysis.]

(ii) With reference to TWO named plant species – one from the **tropical rainforest** and one from the **tropical desert**, explain the question – "Why does where matter?". [4]

- Seraya is an emergent tree found in the topmost layer of the tropical rainforests where it experiences high temperature, high rainfall, full sun and strong winds.
- So, the leaves of the Seraya tree are small so as to reduce transpiration caused by the high temperature and strong winds.

OR

- The Leaf Litter plant can be found in the understorey layer of the tropical rainforests where there is limited sunlight.
- The leaves of the Leaf Litter plant is large so as to increase its surface area to take in as much of the limited sunlight as possible.

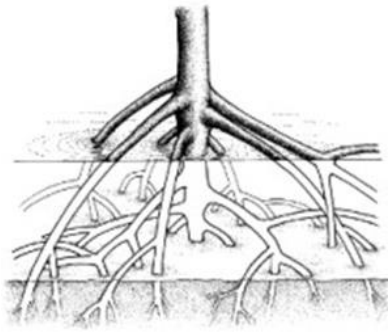
AND

- The Saguaro cactus can be found in the arid tropical environment where temperatures are high and precipitation is low.
- It adapts to these harsh conditions by growing needle-like leaves, so as to reduce its surface area and thereby reducing transpiration.

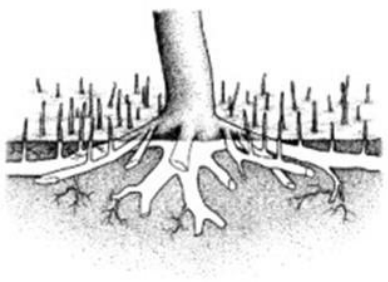
[For each plant species: 1 mark for mentioning the plant species and the climatic conditions where it is found. 1 mark for explain how the plant species adapts to the climatic conditions.]

3(b) Figure 6 (Fig. 6) shows the different roots system of the tropical mangrove trees.

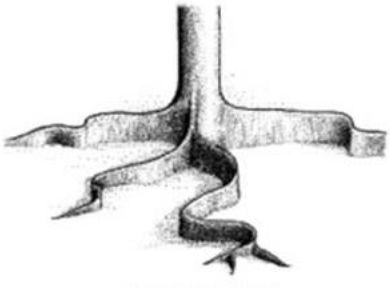
Fig. 6



Stilt roots



Pneumatophores



Plank roots

Source: https://d3i71xaburhd42.cloudfront.net/3c45eddae7effba5a28c4a9e9e2a67c95208412c/11-Figure2-1-1.png

(i) Study and use Fig. 6 to identify the zones where each of these roots system can be found. [3]

- Seaward zone – Pneumatophores
- Mid-zone – Stilt roots
- Landward zone – Plank roots

[1 point = 1 mark, total of 3 marks]

(ii) Explain your answer in (b)(i). [3]

- Pneumatophores - also known as breathing roots, are vertically growing roots that emerge from the mud and protrude above the water level. Therefore, they are found in the zone where the roots are frequently submerged.
- Stilt roots - They grow downwards from the trunk and arch above the mud, acting like stilts to keep the tree stable in the soft substrate, therefore, they are found in the zone where it experiences the constant ebb and flow of the tides.
- Plank roots - Plank roots is widespread and shallow, thus provide structural support to the tree, helping it withstand strong winds and tidal forces nearer to the land.

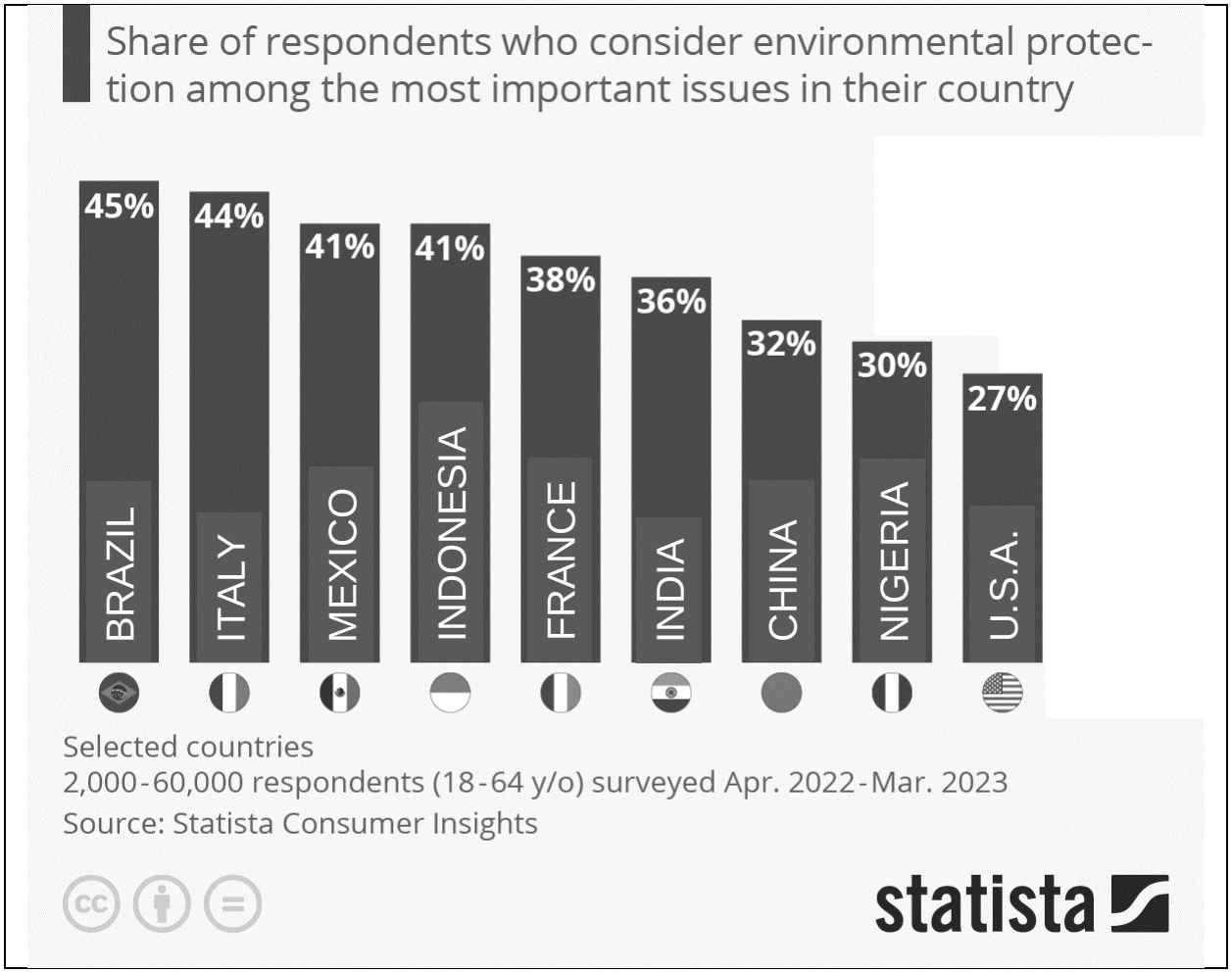
[1 point = 1 mark, total of 3 marks]

3(b) Figure 7A (Fig. 7A) shows an infographic poster on the number of environmental petitions launched in Indonesia during 2019 and Figure 7B (Fig. 7B) shows an infographic poster on how people from several countries think about environment protection in their countries.

Fig. 7A

Source: https://hotsites-wordpress.s3.amazonaws.com/uploads/2020/01/Change.org-Indonesia-Environment-1024x554.jpg

Fig. 7B



Source: https://www.statista.com/chart/29935/environment-major-issue-survey/

(i) Study and use Fig. 7A and Fig. 7B to describe the Indonesians' view about environmental protection in their country. [2]

- The Indonesians are very concerned about the environment in their country with 41% of Indonesians surveyed indicating their concern over environmental protection as one of the most important issues in the country.
- The most important environmental issue is related to the tropical rainforests - In 2019, 16 petitions were launched with 3,161,878 signatures indicating forest fires (763,497 signatures) and forest protection (1,335,099 signatures).

[1 point = 1 mark, total of 2 marks. Accept any plausible answers with evidence.]

(ii) Explain, using TWO strategies, how the ASEAN countries can sustainably manage the tropical rainforests in Southeast Asia. [4]

- **Engaging local communities:** Governments can involve local communities in the decision-making process regarding forest management. By recognizing the traditional knowledge and rights of indigenous and local communities, the government can establish partnerships that empower them as custodians of the forests. This involvement ensures that community needs, cultural values, and livelihoods are taken into account, fostering a sense of ownership and responsibility for sustainable forest management.
- **Sustainable livelihood projects:** Encourage and support sustainable livelihood projects for local communities that are compatible with forest conservation. Initiatives like agroforestry, sustainable non-timber forest product harvesting, and ecotourism can provide alternative income sources while reducing the reliance on unsustainable practices like slash-and-burn agriculture or illegal logging.
- **Forest certification:** Governments can promote forest certification programs like the Forest Stewardship Council (FSC) to encourage sustainable forest management practices among private companies and concession holders. Certification ensures adherence to strict environmental and social standards, leading to better forest protection, reduced illegal logging, and improved market access for certified timber products.
- **Enhanced monitoring and law enforcement:** Strengthening monitoring systems and law enforcement to combat illegal logging, encroachment, and land grabbing is essential. Utilizing satellite technology and remote sensing can help monitor deforestation and degradation in real-time, enabling rapid response to illegal activities. Strict penalties and enforcement against offenders would act as a deterrent and help protect the forests' integrity.

[1 mark for brief explanation, 2 marks for detailed explanation. Accept any plausible answers.]

END-OF-PAPER